

Still Alive With Sir Clive!

ZXir QLive Alive!

The Timex/Sinclair North American User Groups Newsletter

Volume 11 No. 4

Winter 2001

MEMORY MAP

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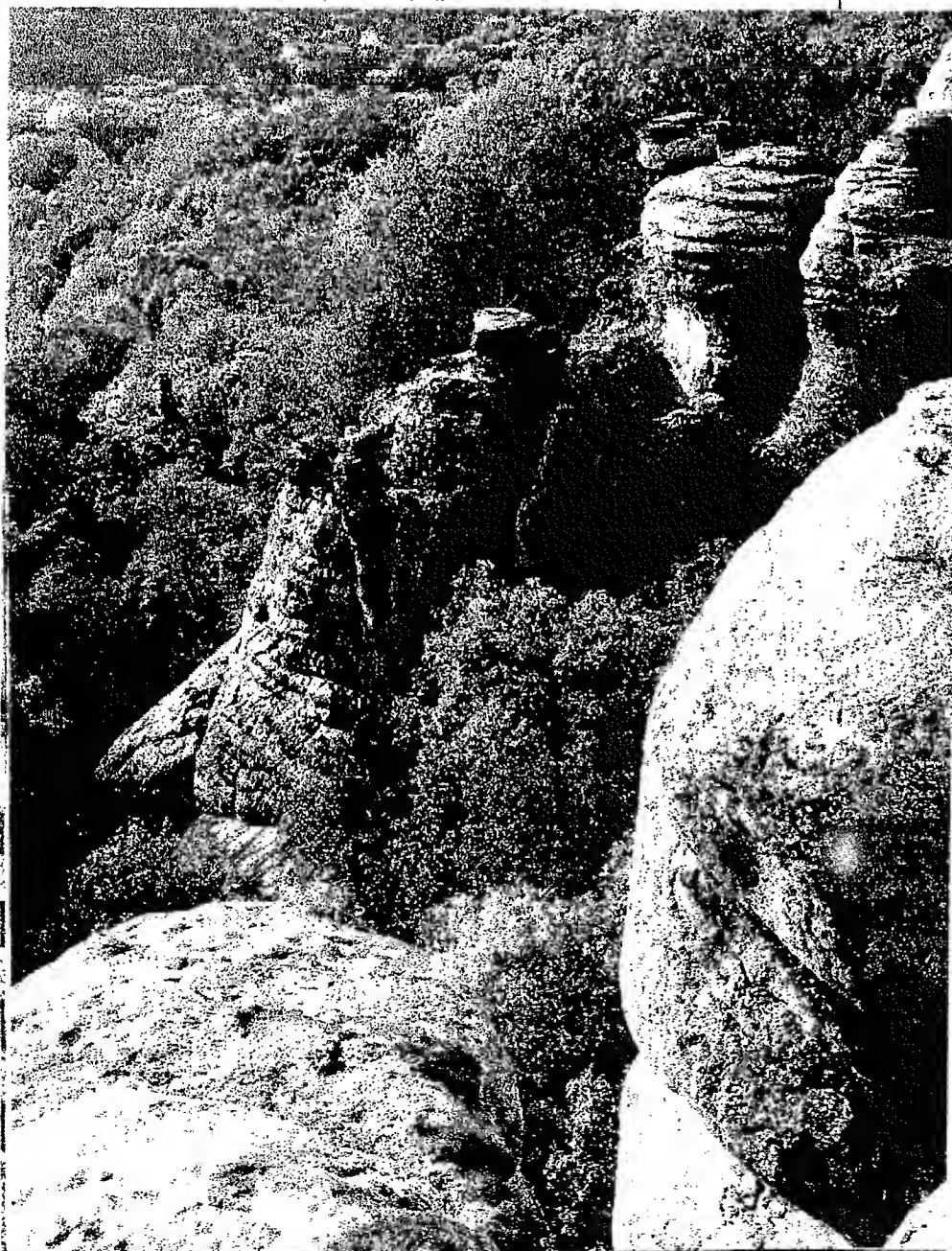
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IT IS THE
TIME
TO RENEW
YOUR
MEMBERSHIP

SHAWNEE AZ

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Established 1991 The Timex/Sinclair North American User Groups Newsletter

T/SNUG Information

We wish to support the following platforms:
ZX-80/81, TS-1000, Spectrum, TS-2068,
Z88 and QL. If you have any questions about
any of these fine Sinclairs, contact the:

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ZXir QLive Alive!

Is the newsletter of T/SNUG, the Timex/Sinclair North American
User Groups, providing news and software support to the T/S
community in a **VOLUME** of four newsletters per year;
beginning with the Spring (March) issue.

T/SNUG's main goal is to preserve and encourage
the use of Sinclair computers by providing an open
forum for the exchange of knowledge, building and
maintaining of software libraries. Providing vendors,
repair service and members with free ad space.

It is the user groups and individual subscribers, rather than the
vendors, that provide the pecuniary support for this newsletter.
Vendors and developers receive this newsletter free of charge,
though contribution from vendors and user groups is gratefully
accepted. Please support our vendors and service providers
whenever possible.

If you have a problem or you have solved a problem, please share
it with the rest of us. No problem will be considered unimportant.

Editor/Treasurer/Publisher

You can keep T/SNUG alive by an annual contribution of \$14
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WEBPAGES

<http://users.aol.com/clubbbs/tsnug/>
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Trea\$ury Note\$

As of December 30, 2001, we have a balance of \$377

Input/Output

by *Abed Kahale*

Dear Mr. Stegman, <danesteg@juno.com>

My Dad, Fred Henn, passed away peacefully at home yesterday afternoon (10/27). I am trying to go through his emails and let people know. I'm not sure how much contact he made with some people.

If there is anyone you can think of that this message should be passed along to please feel free to do so or let me know and I can take care of it.

I will be checking my Dad's e-mail for the next few days and when I get back to Buffalo on the weekends.

Kathy Freeman

Abed,

This is Dean on the Astro software issue. Thanks a lot !! I received a number of responses and programs for my TS following the Input/Output you wrote.

I received a couple of GREAT astrological programs for my TS-2068, Thanks again !!

Dean Mikolajczyk

DeanM97493@aol.com

Hi Abed,

Thanks for your mail. Don't worry, be happy!!! It will not be the last Magazine!!

Joachim (Merkel of Schultz Electronics) who did all the work for more than 10 years, does not want to continue editing the Magazine, because of too few support by the ZX-TEAM members. But his announcement had a lot of feedback and some others will continue to publish a ZX81 related Magazine. We will have our 6th meeting from 15 to 17 of March, 2002 and there we will have a discussion about *who and how*.

We don't have 84 members in 2001 and even if several people have left the ZX-TEAM each year, we always could find some new members.

The problem we have is, that only five or six from the **hard core** and another five or six support us. Most of all others seem to be more than inactive. Good by(t)e

Peter Liebert-Adelt

P.Liebert@t-online.de

Mr. Kahale

I have been looking for a copy of MSCRIPT V5.5 on tape. I have it on 3.5 disk but I don't have a disk system with a 3.5 disk drive on it...I got the software from Jack Dohany, and after I received the software I never got around to getting a disk drive system that would work with the 3.5. I do have a JLO system but I can't get it to boot up it worked a long time ago but I don't know what is wrong. Also who do I get in contact

with about software for the TS-2068? I thank you for sending me the information about the TS-2068 but for some reason man in Tenn. and I can't seem to get together on the equipment I would like to get a second one as a back up. I have tried to contact Jack Boatwright but with out any results I don't know if he is still in the T/S business or not I think he has bought out most of the big places that has gone out, such as Update Magazine. I will send you another e-mail and maybe you can help me out with some of the things I am looking for or put me in touch with some one who has what I want. Thank you for taking the time to read this and I will be thankful for any help you can give me.

Robert C. Webster

rwebsl@netzero.net

Hello Abed

Thanks for the info on the JLO I will e-mail Luke now. I am getting ready for winter but right now it is really we are having a lot of beautiful weather and I am spending most of my day outside working on my yard and house but I know it will get cold and I want something to do so I have decided to put all of my Timex Sinclair computer equipment together and see if I can still use it...once again thanks for your help.

Robert Webster

Hello Abed...

I have nothing this time around. I am interested in working on the

LarKen DOS

Manual for the TS-1000 and the earlier version of the LarKen DOS Manual for the TS-2068. The biggest problem is still the diagrams.

Most of the diagrams in the original manuals are so crude or so degraded that they are not worthy to be put into a new manual. Perhaps someone in the group could lend me a hand with this? And yes, I have asked Larry Kenny himself — several times — if he could send me the originals of the diagrams but he never seems to get around to it — and I doubt that he ever will.

Take care. Write you again sometime soon.

David Solly

k_david_solly@hotmail.com

Hello Abed

Thanks for the reply and if you do come across it let me know. Who handles the JLO software library? Do you know who I would contact about TS-1000 hardware and software?

I got my first TS-1000 in 1984, but like most I got into computers and as things went mad with faster and faster. I got caught in the middle and slowly drifted away from the Timex but still hung on to the ones I had and now that I know longer work in the computer field I want to return to what I really enjoyed and that is the Timex.

My plans is to learn how to program the TS-1000

and the TS-2068 I never learned how to program, only the hardware end of computers so I guess I am working my way through the back door.

I know from reading some of the books I have picked up I missed out on a lot of the things I wanted for my TS-1000.

Well thanks for your help and I will keep in contact.

Robert Webster
rwebs1@netzero.net

6th international meeting for users of Sinclair ZX-80, ZX-81 and Timex TS-1000, TS-1500

From 15th to 17th of March 2002 German ZX-TEAM invites you to attend our 6th annual meeting near the town of Fulda in the heart of Germany.

Please read ZQA! Vol. 11 No. 1 and 2 for more details about our fifth "jubilee" meeting in Spring 2001. Glen Goodwin from Orlando, Florida was our guest and we all hope he will be here again in March 2002. (You will find his review on www.zx81.de as well)

ZX-TEAM is the worlds only known active ZX81 users group (I would be more than happy, if I would be wrong with this). ZX-TEAM was founded in Summer of 1991 and we publish a bimonthly magazine, the ZX-TEAM-MAGAZIN.

In 2001 we had 84 subscribers. Unfortunately for you, our magazine is written in German language, but you can find some short translations on our web-site: <http://www.zx81.de>

This winter we will have some changes in organization, because Joachim, who has been our editor for more than 10 years and more than 60 magazines, will hand over this job to Kai and Peter.

ZX-TEAM members have developed a lot of new hard and software for the black wedge like floppy and hard disk, megabyte(s) of memory; mailbox and robot-control, LCD-screen and "handheld-ZX", ULA replacement by MACH-GAL or FPGA; serial/parallel, analog/digital I/O.

Though we are a German group, we do have some international members Glen and Abed from the USA, Gunter from Spain, Istvan from Hungary, Eduardo from Mexico and Leo from the Netherlands. And we are always very happy, if someone will send articles about his doings with Sir Clive's masterpiece, even in English.

If you are a keen ZX81 user, ZX-TEAM is a **must** for you. We will help you to understand our articles. You will only have to be active, ask and we will try to support you and your Zeddy.

If you think, it won't be worth to buy a ticket

for the flight to Germany, please ask Glen or attend the "virtual reality". We will install a web cam and a chat on the meetings weekend Friday 15th and Saturday 16th of March 2002 from about 21.00 until 23.00 GMT (or even longer, if you "force" us with your questions ;-))

I hope to see you, until then a Merry ZXmas and a Happy New Year for you and your families.

Good by(t)e, "Sinclairly" yours,

Peter Liebert-Adelt

peter@zx81.de

<http://www.zx81.de>

MSCRIPT

Dear Donald,

Thanks for all the information. I'm not much of a hardware nut unless it's fairly simple. The reason most people have trouble setting the print graphics is because Off the poor MSCRIPT is my preferred W/P. Both are a little overpowering at first because there's so much material to understand. The only way to use them is to use them, and learn by your mistakes. But Tasword is the easier of the two to use. one nice feature of Tasword is the "window" which lets you see your work in large characters. This helps eliminate typos.

The reason most people have trouble setting the print graphics is because of the poor instructions. The TS2068 has the graphic characters needed to choose up to 8 different print commands. To alter the graphics for your printer do the following:

1. After loading program hit S/S and STOP.
2. Choose 'g' from menu. This brings you to the Graphics menus. Then you're supposed to ENTER the codes you want. From Line 128 to 143.
3. Let's start with 143. Type 143 then ENTER. You will see 143 with a black square next to it. Let's say we will use this for Proportional Spacing. You look up the printing codes for your printer to see how this mode is turned on. My printer uses 27 112 1 (to turn on) and 27 112 0 (to turn it off).
4. let's start with 143. Type in 143 then ENTER. You will see 143 with a black square next to it. Let's sav. . .proportional Spacing. You look up the printing codes for your printer to see how this mode is turned
5. You then type 27 then ENTER
6. Then type 112 then ENTER
7. Then type 1 then ENTER
8. You will now see line 143 with the black square and the numbers 27 112 1.
9. Look at line 128. There should be nothing next to it. This the invisible square.

10. Type 27 ENTER
11. Type 112 ENTER
12. Type 0 ENTER
13. Now you will see a blank next to line 128 with the numbers 27 112 0. This is the turn off code.
14. To make things simple, use CAP/S + the symbol in the Graphics mode to turn things on, just the symbol in the Graphics mode to turn things off.
15. You must type the symbol right before the text you wish to manipulate. No spaces allowed. When you wish to turn off a particular modes type the turn-off symbol right after the last text bit.

I hope this helps you out. It took me quite a while to figure it out. The instructions are worthless. Best wishes,

Dr. Armand Drucker

194-02A 67th Ave

Fresh Meadows N.Y. 11365

TS-2068 Disk Drives

Dear Donald,

So there is someone else who uses the AERCO system on a TS-1000! I have had mine since they were offered way back when. As you stated, the interface board was \$179 and DSDD drives were \$189 each (I have two), and the power supply and cables was \$69~ I bought them in May 1983. Since I am an electronics technician, I started with what AERCO sold me, and housed and adjusted the system to suit myself. This included reworking the power supply into a case, and beefing it up a bit, then adding 12 volt battery backup via a deep discharge 12 volt marine battery I bought surplus. I then placed the interface board in a case to keep the dust off and make it more durable.

Opening up the interface case, I find the HN462716G (a 2716 EPROM), to not be marked. However, the papers that came with it say it is EPROM version W.7A. The board is an FD-ZX, version 3. I also have the AERCO CP-ZX parallel printer/auto disk boot assembly (EPROM version 2.2), board version 5.

The drives are Pertec FD-250, full height, 48 TPI, 70 tracks, with a 25 msec. track-to-track seek time. I have the booklet in front of me now. The drive holds 16k program chunks, a maximum of 16 "pages" per disk. (I remember talking to Jerry at AERCO several times, the first, for him to tell me the drives were 35 tracks and hold 320k). Usually the first "program" on the disk is a "boot" or easy loader program. I have sent you the original boot disk for you to keep--the "boot" you get is what I place on each formatted disk; this program jumps you to the 15 useable program storage pages available.

I have established a procedure of always writing to the disk in increasing numbers (2 to 16), and never over-writing something already on the disk. I use format to clear the full disks I want to reuse. I also keep a log of disk uses which I record the date, program name, source (what disk did it come from--a sort of "backup"

system), and the destination of the current program save operation. In the sleeve, I keep a slip of paper with the location on the disk, and the name of the program, and any notes I need.

When I reformat a disk for reuse, I go back thru the log book and draw a single line thru all the entries to the disk reformatted. This way I know that that copy no longer exists.

The auto boot board is real handy. Prior to power up, I place a disk in the active drive (I only keep one connected at a time, and use the other as "spare" when needed). Upon power up, the board loads "page 1" of the disk into memory. From there, I can load the page I want to use. This also works (I think I remember) when using disks set up for 64k. The formatting for 64K is the same as 16K, but you only can save six 64k programs per disk.

The disk copy function is utilized by placing the master disk (to be copied) in drive B, a blank formatted disk in A, and RAND USR 13760.

RAND USR 12865 initialize in double density, RAND USR 12860 for single density.

RAND USR 12721 thru 12736 are the save addresses. 12721 writes 16K to the disk on page 1; 12736 writes to page 16. (for 16K only)

The AERCO page says the disk system uses 2 bytes in the BASIC system, namely 16507 and 16508. These are altered when a tape load has occurred, and must be restored to use the disk. RAND USR 12865 takes care of this. In fact, this is how I save programs from within the program:

9900 RAND USR 12865

9910 PAUSE 60

9920 RAND USR 12722 (for example to page 2)

9930 GOTO 1 (or RUN) (to auto run the program upon loading next time)

I have modified the system as follows: board select/deselect (So a non-volatile-memory board can use that space {"Hunter" board} Typically at 8192 - 10240).

If you can find the magazine SYNC Volume 3 issue #6 (Nov/Dec 83), on page 90 you will find a review of the AERCO system. I have that, and let me know if you would like a photocopy.

I did have a problem at one time with the drive electronics. As I recall, a run was burned up on the bottom of the drive (it would not boot). I also seem to remember it to be near a pull-up IC, but I don't

remember why this happened. I have also experienced the slow response of the drive, especially now, since the system rarely gets turned on. I still have it out on a computer desk ready to run (I mostly use it for WORD* now for letter writing {but today I am using Word Perfect on my XT}, and I was doing some machine code work for quite a while. Later I'll tell you about the EPROM boards I made and custom loaded some utilities (like create a 1 REM with 2048 characters (or any size really), delete to end of program, RAM space left, etc.).

You might want to contact the following person also:

Burke Mawby
Box 49
Matawan, NJ 07747

He wrote me about starting a national AERCO USR group. The only date I see on the letter was April 1984) when he got my name from AERCO for leads for members. At the time, I failed to respond, never expecting a rather limited existence of the TIMEX systems. So much for foresight!

Hope this is helpful, write me again and I'll tell you more of what I do and my work with the Z80 and TIMEX. I'll keep this on my XT and update it

when you ask. If you like, assemble a list of questions, and I'll answer on separate paper to keep a running dialogue going. I will call them this week end and leave a message about your efforts with your name and address. Remember Pete Fisher??? He calls there sometimes. Most users now are Z88 and 2040 color machine. Herb Bowers lives about 15 minutes from here and we used to have TIMEX meetings, until he went IBM because of work--he wrote Wheel o Fortune with Banna Brite and his more famous Tax Programs.

David Hartman

2 Gillis Road

Portsmouth, VA 23702-2214

**I still have the Sinclair system
which I would like to find a home.**

Bob Vander Wiede

vanderwiede@yahoo.com

Abed, do you have any idea where I can find a Daisywheel Printer wheel for a Sanyo Daisy Wheel Printer model PR3000. I've been looking on the net, with no luck. Thank You!

Dane Stegman

dane@buffnet.net

Another 2068 Color Monitor Adapter

Les Cottrell

I have used several different color monitor adapters and I have never seen this one in our magazine. It allows the use of CGA monitors with either negative or positive sync. I have some of each, so by putting a switch in the vertical and horizontal circuits I can use the same adapter with different style monitors. The integrated circuit chip is a 74LS04. The Zebra Timex disc system twister board has a spaces on board for IC and a monitor jack. It has all the signals already on the board in this area, so it was easy to add one.

Parts are:-

IC 74LS04

Transistor 2N3906

C1 47u at 16V C2 .001

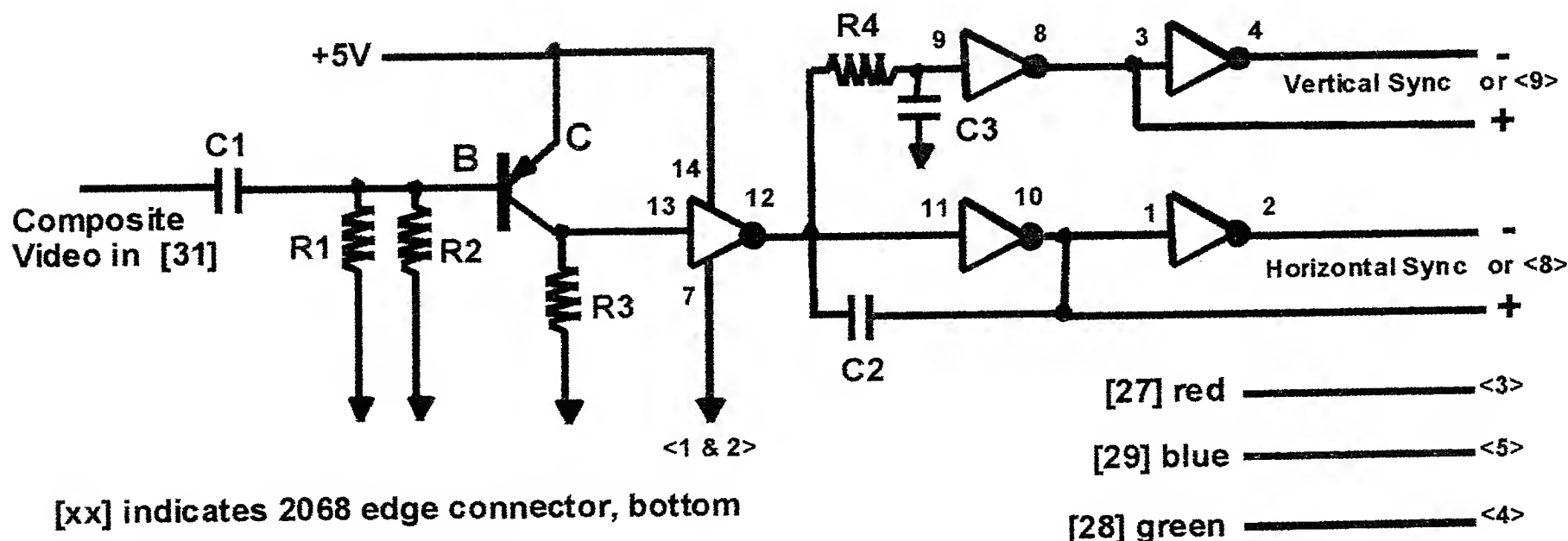
C3 marked 1 Z 5YS 1

R1 33K

R2 15K R3 330ohm

R4 330 ohm

If anyone is interested in building one and needs more detailed instructions email me at jacottrell@cfl.rr.com.



[xx] indicates 2068 edge connector, bottom

<x> indicates rgb connector

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Making – Program Length Cassette Tapes

By Donald S. Lambert

The idea started out with a cassette of programs on a mailing list of a User's Group. You were sent the cassette and when you got it copied (there was supposed to be a time limit) and added a program if you had one and sent it to the next person on the mailing list. The theory was great but due to the problems of various people, the tape Seldom made it back to the User's Group. But in my case various problems prevented me from LOADING/SAVEing more than a few of what could have been great programs.

My problem was complicated by the fact that the tape recorder that got the most consistent LQADs did not have a tape counter; so if third program on the tape failed to LOAD the first time it was a case of typing in the program name (if known) and waiting through several possibly long programs and then if it didn't LQAD you weren't sure if you had passed that program yet. Also, once I got a successful LOAD I would move it to a cassette with that program on both sides so as to not have multiple program tape hassle. But even using a 60 minute cassette makes a lot of waste tape and you still have to wait to wind to either the beginning or to the end to be ready to LOAD the next time and that wasted more time. So I muttered and fumed but I had programs that LOADED successfully.

I was at a garage sale (I stopped to check out some straight backed chairs), I saw a pile of cassettes and there was no price so I asked for a lot price and it was cheap per cassette so I had some cheap stuff to work with. I had no idea of what to do with them at that time- just a desire to use them for a better way than I was currently using. Later, I was browsing in Radio Shack and I saw a plastic gadget that could be slipped onto a 1/2 inch piece of wood and a cassette could be mounted on it and when you turned the crank you could spool the tape from one spool to the other inside the cassette but it was one turn of the handle to one turn of the spool. I saw a possible use for it so I bought two plus a tape splicing kit for cassette tape and got some small pieces of 1/2 inch pine at the lumber yard.

I mounted the two plastic winders and the splicing kit on the frame I made out of wood and clamped it to a typing table and now I could take a cassette with doubtful tape on it and pull the tape completely and cut it at the leader/magnetic tape splices and splice in the good tape and crank for what I hoped would be the proper length, cut the tape then splice it to the other leader and have a shorter tape. It worked,

however the splice wasn't neat in appearance and occasionally it wanted to stick to the tape below it on the spool and still if I guessed wrong I had a tape that was too short or too long.

Logic said that if it takes 4 minutes to LOAD a program then it will also take 4 minute to SAVE it. So if I timed the LOADING of that program I could put a blank cassette in a recorder and run it that long plu8 a little extra for safety cut the tape and wind it into the finale cassette after splicing and have a program length tape. So I would sit there winding the hand crank while running the tape through a bit of tape cleaning cloth to maintain a little pressure on the tape. The system worked and only had a few flaws - the splice would once in a while hang up in the cassette; the tapes had leaders; and finally the worst flaw - it was very time consuming.

I found that I had to anchor the ends of the cut tape to the cassette shell with Scottish tape to prevent the leaders and or the tape from being lost into the cassette. After I had four or five such accidents I finally took a cassette apart, about half the yard sale cassettes had screw construction and the other half were sealed plastic. Of the two I took apart, the spools were of different construction. One had a notch with that looked like a tiny piece of tubing had been stretched to insert and hold the tape in place and the other had a plastic segment that snapped in place, about then I discovered that the tape I was using to SAVE on sometimes was marginal. I had better quality tape so I tried that it was a better SAVE. And the better tape was in a screw together cassette. While an idea was flickering in my mind I did a survey. I had cassettes that screwed together from seven different manufacturers. I carefully opened each and laid them out without mixing the parts. Being an inspector at Collins Radio (mechanical and sheet metal inspector) I got out my worn retired micrometer and started measuring the spools of the cassettes and made a chart of the dimensions. And found the physical dimensions: outside diameter, thickness, clearance for the central flange of the cassette shell all were so close to the Same that I concluded that a spool from cassette A would work in any of the other cassette so long as the spool with its mating segment tape retainer were used as a pair.

So I started putting the take up spool in the supply tape cassette assembling the cassette again and SAVEing the program and cutting the tape and

putting the SAVED portion of the tape in the other cassette and reassembling the retainer to the spool and then reassembling the cassette. But I ran into of centering the tape on the width of the cassette spool and also once in a while of dropping the whole unassembled cassette on the floor and trying to find all the pieces. But I had program length cassettes but at the expense of frustration from the fumbling. What I needed was a fixture to hold everything.

About this time I acquired a pair of T/S 2020 cassette recorders and built a caddy so I could use them both at the same time went to battery power on the SAVE machine to get reliability on the SAVES and I built a LOAD meter/speaker loading aid to monitor the LOADs.

Suddenly I saw that was needed and how to build it (see drawing). One thing that I don't have incorporated in the design yet is a pair of plastic cups to hold all the little parts until the cassettes are reassembled. The cups could be fastened on with double sided tape. The board has room for both the cassette for the supply tape and the cassette being made the dedicated program cassette and the bolt to hold the spool that is to be fastened to the end of the tape. The notched out space is for the bulge at the working part of the cassette so that the edge of the tape when it is fastened to the spool will be in the same plane. The nut holds the spool securely so that the plastic retainer can be snapped in.

The bolt that holds the spool securely is a 5/16 bolt. The threads are not critical except that you have to have a nut to fit the bolt. Take along a cassette so that you can be sure that the bolt will go through the sprocket holes in the spools. If the bolt is loose in the hole use glue. I don't use a wrench on the nut, finger tight has been tight enough.

The four wood dowels (5/16 inch diameter) that are used to slip easily into the sprocket hole of the spool. I inserted the dowels into the board and marked the projection and chunked the end that was in the board in a 3/8 inch hand drill and with the drill running held a pad of sandpaper against the dowel and reduced the diameter till the sprocket hole slipped easily over the dowel. The dowels were glued to the board when all other work was done on the board.

I used a 1/2 inch pine board, 6 inches by 11 inches long but an 8 inches by 11 inches long would be better, for the base board but any wood would work. I marked the spot for the depression after temporarily inserting the dowels and putting a cassette over the dowels and used a wood chisel to cut the depression 1/8 inch deep. An alternate construction could be to fasten an identical sized piece of 1/4 inch plywood to the base board with

wood screws and after drilling the holes and marking the depression cutting the depression out of the plywood with a coping saw. If that route is taken, you could cut two or more circular cutouts to be used for the small parts retainer. Actual size and layout can be modified to suit the user. I put self-sticking cushion feet under the board to keep it from sliding around and to clear the bolt head.

The differences between 60 minute tape and 90 minute tape is the thickness of the tape, usually the base material is much thinner on longer play tape. I measured the three tapes: 60 minutes is 1 mil (.001) inches thick, the 90 minutes tape is .6 mil (.0006) inches thick and the 120 minutes tape is .4 mil (.0004) inches thick. And a thinner tape means it will be more prone to stretching and stretching will change the timing of the signals from the tape player and that might lose its place and default the LOAD.

At this point I had best get some definitions established before I thoroughly confuse you. Lay a cassette down with the portion of the cassette that has the bare tape showing facing you and we will call that the front. The part of the cassette facing away from you is the back. And with the cassette laying with the five screws facing up is the top and the opposite side facing down is the bottom. In that position the left spool is the feed spool and the right spool is the take up spool. The top side is the side that will be used to record the first side of the program. Working that way is the only practical way of making the backup copies without losing your sanity while trying to remember which side is the just recorded program.

Disassembly and reassembly: With the cassette with the screw heads up, use a Phillips head screwdriver to remove the screws (my screwdriver is magnetic enough to pick up the screws out and doesn't seem to erase the tape). With all the screws out, I usually have the cassette in my hand, gently try to separate the two halves at the tape opening and when it separates and you can lift the top off of the bottom shell half and with the tape opening facing you rotate the top half away from you so that it is upside down and lay it down. If the lubricated paper didn't lift off with the top half lift it off with tweezers and rotate it the same way and lay it on the open top half. Now set the cassette on the board with the dowels going through the spools. On the first few cassettes eye the way the tape is routed till you have it firmly in mind. Reassembly is the reverse except that before you put the top on you must be sure the tape is in the proper place. An aid to controlling the tape is to keep the tape from having any slack in it by gently turning the supply spool to

take up any slack with a finger tip. When the top is in place look to be sure the tape is still in the proper place and turn the take up spool a turn or two with a finger to see if the tape is free. You will find that static electricity will make the tape "float" away from the cassette shell.

Now the step by step procedure: I first open up and strip out the tape from the cassette that I am going to put a program in. If it is tape that is no good I lift out the take up spool and push the retainer off to one side of the spool and lay the retainer and the spool in that cassette's parts place and then lift the supply tape spool out. If that is tape I am going to discard I push on the spool while holding the tape and if it isn't wound too tight it will push off the spool and then you can slide the retainer off and put the retainer and spool in the keep place and toss the tape in the wastebasket. I place one of the spools on the bolt and snug up the nut finger tight. I lay the cassette to one side.

I open up the cassette that is to be the supplier of the tape for the program and lay it in position next to the bolt and remove the take up spool and lay it and the retainer aside and run the tape by the spool on the bolt and press the retainer against the tape and into the notch for the retainer and with the end of the retainer nearest the supply tape started first press on the retainer till it snaps in place. Holding the tail of the tape with tweezers cut the tape flush to the spool with an Exacto knife and after removing the nut place the spool in place in the cassette and position the tape and lay the lubricated paper and the top half of the cassette in place and replace the one screw that is in the center of the thicker part of the other screws do not need to be replaced now.

With your finger or a slip on eraser on a pencil take up all the slack in the tape winding it all onto the supply spool and put the cassette in your recorder and set the counter to zero or use a timer. Get your program ready to SAVE and start the recording and I run the tape to a count of 10 on my T/S 2020 recorder and when it reaches a count of 10 I hit ENTER and the SAVE routine begins and I sit ready to zero the counter just as soon as the SAVE routine stops. When the SAVE routine stops I reset the counter to zero and run the recorder till it has a reading of 15 and I stop it. I take the cassette out of the recorder and cut the tape at the pressure pad area with a pair of scissors careful not to damage the pressure pad or the spring that holds it in place. Open the cassette and place it in position two and place- the first cassette in the first position and take the just recorded tape on the spool out and turning it over place it in the supply spool's position and put

that cassette's other spool on the bolt and fasten the tape to it and place it in the cassette. This time when you reassemble the cassette you will put all the screws in place. If one screw strips the threads and won't hold you can leave it out or you can try to put a tiny sliver of wood or paper in the hole or as a last resort you could use glue. Now you are ready to record the same program on the other side of the tape. After you have verified that both programs are good since you have reassembled the cassette you can remove the record tabs and label the cassette. When you SAVE the program on the reverse side of the cassette you don't have to watch for the end since you already have a program length tape. Don't forget to give the beginning a count of ten to get into the good part of the tape.

What tape do I use? Some of my often used programs are on what were originally 90 minute tapes quality goes there is one brand that has a lower output on LOADING and thus more possible failure on LOADING and also audible dropouts - and that is Memorex db. And besides it comes in a sealed cassette so you have to destructively open up the cassette to remove the tape and take a chance on damaging the tape. I have used the following and they are good: Sony HF60, Maxel UR 90, TDK D90, Sony LNX 90, and BASF LHEI 60 (does have the spool that can't be reused but the output is extremely high although I had one cassette that had a drop out.) I try to look over the cassettes to that they have the three important factors: screws used in assembly, have the spool that has the plastic segment for tape retaining and the cassette body itself is of good quality. In purchasing cassettes for the shells to be used to reload tape into I take along a Phillips screw driver and have disassembled a cassette at the counter to see the quality of the construction. Of course I purchased the cassette first and only once did I get static from the sales person and I just asked her who owned the cassette? I would look to see that the shells were not flimsy, that is where a lot of the cheap manufacturers save money, in fact some even had the plastic so thin that there were holes in it and the cassette could be easily twisted and broken. Next check to see that the spools have the removable plastic segments that snap in and the spools look smooth. (I have never seen bad quality in the spools) and last look at the window where you see how much tape is left to run. A good cassette has a solid clear plastic window, either the cassette is molded of clear plastic or else the window is clear and glued in place; cheaper cassettes have no closed window and use a clear plastic friction paper to keep out the dust and dirt and a very few have nothing at all.

The Z88 Source Book

Section 2

Modem cable to connect Z88 to USR WorldPort 14.4K Modem.

Z88		Modem
2	----- TxD -----	3
3	----- RxD -----	2
4	----- RTS -----	7
5	----- CTS -----	8
7	----- GND -----	5
8	----- DCD -----	1
9	----- DTR -----	4

Z88		Printer
2	-----	3
3	-----	2
4	-----	5
5	-----	20
7	-----	7
8	-----	20
9	-----	6, 8

Z88		Amstrad CPC6128
2	-----	3
3	-----	2
4	-----	5
7	-----	7
5	-----	20
8	-----	
9	-----	

The Spectrum - Z88 pinouts below assumes the Spectrum has an Interface 1 to provide a serial port.

Z88		Spectrum
2	-----	3
3	-----	2
4	-----	5
5	-----	4
8	-----	
7	-----	7
9	-----	9

For users of British QL's, the serial port is an RJ11 phone-like port. Here are the pin outs for both SER1 and SER2 for this type of serial port.

Z88		SER1	SER2
2	-----	2	3
3	-----	3	2

4	-----	4	5
5	-----	5	4
7	-----	1	1

Z88		Apple Super-Serial Nexus
1	-----	1
2	-----	3
3	-----	2
4	-----	5
5	-----	20
8	-----	
7	-----	7
9	-----	8

THE Z88 FILES

How the Z88 stores files is important to know when transferring files from the Z88 to other computers. This section helps in understanding how to translate Z88 files to be used on other computers.

The Z88 has three basic file types; PipeDream, CLI(ASCII), and BBC BASIC. PipeDream can store files in plain ASCII text format but normally stores them in a proprietary format. BBC BASIC files are stored in a tokenized format. There is a way to transfer BBC BASIC files into ASCII (Z88 User Guide P. 200). Other more specialized file types are Diary and PrinterEd files.

The Z88 uses CR (Carriage Returns) to stand for End-Of- Line (EOL). The QL uses LF (Line Feed), MS-DOS uses CR/LF. Some conversion is necessary to make these ASCII documents ready for the QL or PC. CRtoLF_exe for the QL and ADDLF.EXE and RMCRCR.EXE for the PC will do the conversion. In going from the QL to the Z88 the program QLtoZ88_exe has an option to convert LFs to CRs so that ASCII files can be easily sent to the Z88.

When PipeDream prints, it adds a LF to the CR that the printer is expecting. It also adds ESCAPE sequences that tell the printer what to do. One ESC sequence will be at the start of the file, others may be embedded in the document.

If you are going to transfer PipeDream documents to be used on the other computer, it is best to save them as ASCII documents. On the Save File screen, there is an option to save in ASCII.

Since most other computers do not use BBC BASIC, converting the files to ASCII is not

necessary. But if you want the BASIC programs to be readable on the other computer, then you have to convert them to ASCII and store them in CLI files (Z88 User Guide P. 200). It only takes a few steps to make them runnable on the Z88.

TRANSFERRING FILES

Files can be transferred from Z88 to Z88 via EPROMs, but most files will be transferred via the serial port. The Z88 comes with file transfer software, but it has its limitations. Some people prefer to use a communications program like Z88COMM that supports XMODEM protocol and has error correction. PipeDream documents can be printed and captured on a remote computer.

Files are transferred for two reasons, 1) to use the other computer to store Z88 files on disk, 2) to import the Z88 files for use on the other computer. If you wish to only store Z88 files on another computer, then you need not worry about how to put the Z88 files into a form usable by the other computer. If you wish to use the Z88 files on the other computer, then you will need to change the Z88 files so that they can be used by the other computer.

Transferring Files with Import-Export

The Z88 manual does not make big news of it, but the Import-Export pop-up has a protocol for transferring files. Any files sent through Import-Export will have some added bytes. At the beginning of a transferred file will be ESC N filename ESC F. At the end of the file will be ESC E. You will probably need to trim this data from the file.

On files that have non-ASCII data, the non-ASCII bytes are converted into a ESC B xx yy sequence. This means that to get these files back into the Z88, they must be imported through Import-Export to convert them back. In general, files transferred out of a Z88 with Import-Export need to be transferred in with Import-Export. Those coming out with XMODEM need to be sent in with XMODEM.

If wishing to use a PipeDream document on another computer, it is best to have the document as ASCII (on the save screen) before sending it. This will make importing into another application easier.

To a QL

The QL serial ports are known for having problems at higher baud rates. There is a HERMES chip that fixes these problems. Without HERMES, I recommend using a baud rate of 1200. I've also noticed that when transferring files to disk instead of a RAM Disk, some errors creep into the file.

On the QL enter:

COPY SER2 TO RAM1_FILE_EXT

On the Z88 do: <>X, S (for send), enter the file name and hit ENTER. The file will be sent to the QL, with the

number of lines being displayed on the Z88. When the prompt returns on the Z88, hit CTRL-SPACE to stop the copy on the QL.

From a QL

On the Z88, go to the Import-Export pop-up, type R to Receive, enter a file name, and then hit ENTER.

On the QL, EXEC QLtoZ88_EXE, enter a file name, select the baud rate, and wait for the program to run.

On the Z88, you will see a count up of the lines as they are transferred. When the transfer is complete, the Import-Export Menu will return.

To a PC

Due to the difficulty of accessing the serial port via Basic or C on a PC, I was not able to write any transfer programs for the PC. There was one on the Z88 BBS in California, but that BBS has been gone for a couple of years.

Instead you can use almost any communications software for the PC. I will use ProComm as an example. ProComm is one of the more popular communications programs and it has a Shareware version.

Once you have hooked up the computers via the serial cable, start ProComm. Set it to the same baud rate as the Z88. Set the Z88 to not use XON/XOFF.

Hit the PageDown key on the PC. ProComm will ask for a transfer type. Hit 7 for ASCII. Enter a file name and hit return. The PC will be waiting for the file to be sent. On the Z88, enter Import/Export by hitting [] X. Enter S for send. Enter the file name and hit return. You should see the text appear on the PC screen as it is being sent. Once the file transfer is complete, hit ESC on the PC to tell ProComm to stop the file transfer. You now have the file on the PC.

It is advisable to run the file through the program ADDLF.EXE so that the file will be fully MS-DOS compatible.

From a PC

Before sending an ASCII document to the Z88, you should run it through the program RMLF.EXE so that the file will be Z88 compatible.

Using ProComm as above, set the baud rate on both computers. On the Z88 enter Import/Export with [] X. Enter R to receive. Enter a file name and hit return. The Z88 will be waiting for the file.

On the PC, hit the PageUp key to do an upload. Hit the 7 key to signify ASCII transfer. Enter the name of the file to send. The file will now be sent to the Z88. When the transfer is done the Z88 should beep and be asking what to do next. If not, hit the ESC key to tell it that the transfer is done.

Printer Capture

One way to get a PipeDream document without saving it as ASCII is to print it, but instead of having the Z88 hooked up to a printer, it is hooked up to a computer. Output from the Z88 is stored on the computer.

To A QL

On the QL, type COPY SER2 TO RAM1_FILENAME_EXT and hit ENTER.

On the Z88, in PipeDream, hit <PO to print.

On the QL, once the Z88 cursor is back, hit CTRL-SPACE to stop the copy. The transfer is complete.

To A PC

Use the same procedure listed above for transferring files from the Z88 to the PC. Since PipeDream is sending the file to a printer, the file will have the necessary CR and LFs for the PC. You do not need to run it through ADDLF.EXE.

XMODEM Transfer

To A QL

There are a number of QL communication programs that support XMODEM transfer. For demonstration purposes I'll use QLterm.

Once QLterm is load on the QL and Z88COMM on the Z88, make sure both systems are using the same baud rate. Hook up the cables and we're ready to go.

On the Z88, select R for Receive Xmodem. Enter the file to receive, but do not hit return. On the QL, hit F3 to get into command mode. Enter XS for XMODEM Send, enter a file name, but do not hit return. On the Z88 hit return and then hit return on the QL.

As each block is sent, you will see the progress on both computers. Once the transfer is complete, QLterm will go back to Terminal mode, and the Z88 will switch to VT52 Terminal. On the Z88, hit the Index key and select Z88COMM and you are back where you started.

From A QL

On the QL, hit F3 to enter command mode. Enter XR for XMODEM Receive, enter a file name and do not hit return. On the Z88, hit S for send XMODEM. Enter a file name, but do not hit return. Hit return on the QL and then hit return on the Z88. As each block is sent you will see the progress on each computer.

On the QL, QLterm will return to Terminal mode. The Z88 will enter the VT52 Terminal. Hit the Index key and select Z88COMM.

To A PC

Load up a communications package on the PC. As stated above, I'll use ProComm as an example. Run Z88COMM on the Z88.

On the Z88 enter S for Send XMODEM. Enter the file name, but do not hit enter yet. On the PC, hit PgDn for Download. Select 1 for XMODEM, enter the file name and hit return. ProComm will wait for the transfer to start. On the Z88 hit return.

Z88COMM will print the total number of blocks needed to transfer the file and will start counting up blocks as they are sent. Once the transfer is complete, Z88COMM will put you into the Terminal. Hit the Index

key and select BASIC to return to Z88COMM. On the PC, ProComm will know that the file transfer is done and return to it's normal screen.

From A PC

Load up the software on both machines as stated above. Once in Z88COMM on the Z88, select R for Receive, enter a file name and hit return. Z88COMM will wait for the transfer. In ProComm on the PC, hit PgUp for Upload. Select 1 for XMODEM, type in a file name, and hit return. The file will now be transferred.

Once the file is transferred, Z88COMM will again put you in the Terminal. Hit the Index key and the select BASIC to return to Z88COMM. On the PC, ProComm will return you to it's normal screen.

QUILL TO THE Z88

One user came up with a neat idea of how to transfer a text file from Quill to the Z88. Using INSTALL_BAS, set up a printer driver that uses preamble codes of ESC,N,ESC,F and post-able codes of ESC,E,ESC,Z. These are commands for the Z88 Import/Export application.

To transfer the text, enter Import/Export and select Receive and enter a file name. Now have Quill print the file. Once the file is printed, the post-able code will tell the Z88 that the transfer is done.

Macintosh File Transfers

Since I do not have a Macintosh, I have to rely on the work of others, primarily Dave Bennett.

When the Z88 first came out, it was marketed to Macintosh owners as a portable Mac. Since Mac people were used to being a little different, it was assumed that they would not mind a laptop that was sort of non-standard. Cambridge sold Z88MacLink to make Z88 to Macintosh file transfers easy. The software even comes with file conversion, allowing text and spreadsheet files to be shared between the Z88 and Mac.

Z88 MacLink comes on ROM and can be bought with the Mac to Z88 cable. Once the two computers are hooked up, all work is done on the Macintosh. The Mac treats the Z88 file system as an additional disk drive (but a slow one). The program works with the typical Mac look and feel.

File conversion is between MacWrite and PipeDream, PipeDream and Lotus WKS files (which most Mac spreadsheets should be able to handle), and Z88 BBC BASIC and Macintosh BBC BASIC (probably available from England). There is a no conversion option for straight text files or for storing Z88 files on the Mac hard disk in native Z88 form.

File transfers between a Mac and Z88 do not need Z88MacLink. Any communication software should do the trick. The only advantages to Z88MacLink is it's ability to transfer multiple files at once, and the ease of use.

There are some Public Domain Mac/Z88 programs written by Richard Haw. All are available on GENIE or from Dave Bennett. They are:

ZX : A Mac to Import/Export (Z88) transfer program.

Z-Image : Enables the Z88 to display Mac graphics.

ZHyper: Enables the Z88 to interface with the Mac Hypercard program. **Dave Bennett's** address is:

1275 Timber View Dr.
Mechanicsburg, PA 17050

T/S 2068 File Transfers

Once again I have to rely on others to help fill in this area of file transfers. Again Dave Bennett supplied information, along with John Shepard.

There is no commercial software available to transfer files to/from the T/S 2068 and the Z88. Both computers will need to use some sort of communications program. It has even been suggested to use a BBS program on the T/S 2068.

Two methods of hooking the computers up have been suggested. The most obvious is hooking up the serial ports on both machines. The problem with this is that the T/S 2068 does not come with a serial port. A serial port board must be added. These can be bought from some Sinclair dealers, or one can be added to a T/S 2050 modem. I have not found any information that describes the pin-outs in making a T/S 2068-Z88 cable.

The other method is hook the two computers up with two modems. A phone line is linked between the two modems. One modem is put in ORIGINATE mode and the other in ANSWER mode. Once they connect, anything you type on one computer will be displayed on the other. Now files can be transferred using the built-in file transfer options in Z88COMM and something like MTERM on the T/S 2068. Text files can be transferred by doing a data capture. This is a feature of most communications programs that store any text going to the screen, in a file. One user reported that he could not get the two modems to talk without first hearing a dial tone. Not wanting to alter the two modems to fake a dial tone, he plugged a line from each modem into a RJ-11 Y adapter and then plugged the adapter into the wall outlet. Now each modem would get a dial tone.

Easy QL to Z88 Transfers

Phil Borman has written a QL program that fully understands the Z88 Import/Export protocol. The program allows batch send and receive of Z88 files on the QL. The Z88 file names are imbedded into the file so that when they are sent back, you won't need to re-enter the file name. Because the QL can handle a variety of characters in file names, the program can save the Z88 file to the QL disk with a real Z88 file name (RAM:/letter.doc). The program comes with about 6 pages of good documentation and is included on the Z88 Source Book disk.

DOCUMENT CONVERSION

There are some commercial programs that will convert PipeDream documents into Quill or other word processors. PCLink, MACLink, and the other commercial Link packages have this software. Without having this

software, the best way to use PipeDream documents with other word processors is to use plain ASCII to get the document from PipeDream to the other word processors.

Most word processors support the importing of ASCII files. Some will import by line or by paragraph. Experiment how each word processor imports text files. If the file has extra blank lines, some word processors will not allow you to delete these lines once the document is imported. Each program is different.

Converting PipeDream spreadsheets to Excel or Abacus can be a little difficult. The numeric and text data should be able to convert, but the formulas will not. The formulas are not compatible.

RAMS AND EPROMS

Memory on the Z88 can be increased by adding extra RAM cards into the slots on the front. Each of the three slots can address up to 1 Meg of RAM. Slots 1 and 2 should be used for RAM and Slot 3 for EPROMS. Adding RAM in Slot 3 will consume more power, thereby reducing battery life.

There is an add-on chip that will increase the internal memory of the Z88 from 128K to 512K. 512K is the highest that the internal memory can be.

The latest version of the ROM is 4.0. It is supposed to fix a few nagging bugs left in version 3.0. To see what ROM version you have, while in Index, hit the MENU key and then the left arrow key. The version of the ROM will be listed, along with other information about software dates and copyrights.

Inserting a RAM or EPROM Card

1. Turn the Z88 ON and have the INDEX displayed.
2. Open the clear plastic flap covering the slots.
The Z88 will give a short beep and go blank.
3. Push the RAM pack into the slot, making sure the writing on the front is upright.
4. Close the flap. The Z88 will come back on.
To check that the card is working, type <> CARD.

Removing an EPROM Card

1. Turn the Z88 on and have the INDEX displayed.
You must not have any suspended activities which are making use of the EPROM.
2. Open the clear plastic flap.
The Z88 will give a short beep and go blank.
3. Remove the EPROM.
4. Close the flap. The Z88 will come back on.

DO NOT REMOVE AN EPROM WHILE THE Z88 IS TURNED OFF.

I have found that removing a RAM card is not good for the Z88, it can cause it to crash or act very flaky. If you are going to remove a RAM card, back up your files, use the same procedure as removing a EPROM card, and then do a hard reset on the Z88. It will now recognize all of your memory.

To be continued

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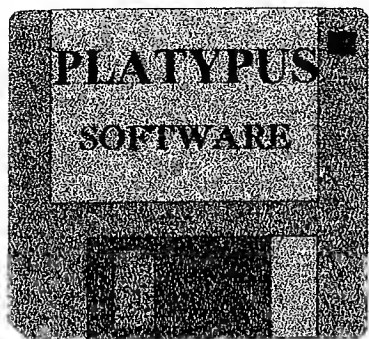
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